

## A Revision of the Bee Genus *Aztecathidium* (Hymenoptera: Megachilidae)

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*Abstract.*—The exclusively Mexican bee genus *Aztecathidium* is revised and the three known species separated in a key. One new species, *A. tenochtitlanicum*, is described from the State of Jalisco. Distribution data for the two previously known species are provided. Distinctive morphological features of each species are illustrated.

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This paper is dedicated to my friend and colleague, E. Gorton Linsley, the first live-bee systematist I was privileged to meet, more than 35 years ago. Thank you, Gort, for your kindness and encouragement!

### INTRODUCTION

The higher classification of the New World anthidiine bees was reviewed by Michener (1948) and the component genera separated by a key. The Mexican genus *Aztecathidium* was subsequently described by Michener and Ordway (1964) for two previously undescribed species. A third species, heretofore undescribed, has prompted the present study.

### MATERIAL EXAMINED

Specimens used in this study are from the following collections: Estación Biológica Chamela, Universidad Autonoma de México (CHAM); Natural History Museum of Los Angeles County (LACM); Snow Entomological Collection, University of Kansas (UKAN); USDA Bee Biology and Systematics Laboratory, Utah State University (UTSU).

### SYSTEMATICS

*Aztecathidium* has been adequately described by Michener and Ordway (1964), and there is no need to repeat that description. The few known species are moderate-sized, sparsely hairy bees, and the body is more or less elongate and parallel-sided. Two of the species are principally reddish with more or less defined yellowish areas on the head and body; they resemble the species of *Paranthidium*, subgenus *Mecanthidium* Michener (1942). The third species, described below, is black and has sharply contrasting yellow markings.

*Aztecathidium* differs from *Mecanthidium* in possessing a sharply carinate (almost flange-like) preoccipital ridge across the top of the head and down the side to the hypostomal carina; the mandibles of both sexes have one or two teeth on the cutting margin; the clypeus, especially of the female, is protuberant; the pronotal lobes are carinate; the last metasomal tergum of the male is bilobed. In

*Mecanthidium* the preoccipital ridge is weak and present only across the top of the head; the mandibles of both sexes are without teeth on the cutting margin (except in the male of one species, which has a single tooth); the clypeus, in profile, is weakly convex; the pronotal lobes are lamellate; the last metasomal tergum of the male is protuberant and blunt.

In Michener's (1948) key to the New World anthidiine genera, *Aztecantidium* runs to *Allanthidium*, from which it differs by the depressed tergal margins, the completely carinate preoccipital ridge, the presence of an anterior mesepisternal carina, and the lack of a row of pits across the base of the propodeum.

The type species of *Aztecantidium* is *A. xochipillium* Michener and Ordway.

#### KEY TO SPECIES OF AZTECANTIDIUM

- 1a. Male tergum 4 with short lateral tooth or angle and emargination of tergum 7 as wide as deep or wider (Figs. 4, 6); apex of female labrum concave and clypeus moderately protuberant and rounded in profile (Figs. 3, 5) ..... 2
- b. Male tergum 4 without lateral tooth or angle and emargination of tergum 7 deeper than wide (Fig. 2); apex of female labrum tridentate and clypeus strongly protuberant and angulate in profile, with biarcuate carina (Fig. 1) .....  
..... *cuauhtemocum*
- 2a. Male tergum 7 with lateral margins mainly convex and apical lobes broad (Fig. 6); female clypeal profile evenly convex from base to summit of apical declivity (Fig. 5); both sexes principally reddish, with limited blackish areas and obscure yellowish marks ..... *xochipillium*
- b. Male tergum 7 with lateral margins mainly concave and apical lobes narrow (Fig. 4); female clypeal profile convex at base, concave toward apical declivity and distinctly elevated at declivity (Fig. 3); both sexes black with yellow maculations ..... *tenochtitlanicum*

#### *Aztecantidium cuauhtemocum* Michener and Ordway

Figures 1–2, 7–9

*Aztecantidium cuauhtemocum* Michener and Ordway, 1964: 75; ♂ ♀.

The type series was collected 2 mi S Tzitzio, 4450 feet elevation, Michoacán, 29 July 1962 (M. G. Naumann), on Leguminosae, and all four specimens are in the UKAN collection. I have seen a paratype of each sex. No additional specimens have been available for study.

Both sexes of this species are easily recognized by the figures and the characteristics cited in the key. The female is especially characterized by the biarcuate, strongly protuberant clypeal carina and the tridentate labral apex. The male is less obviously distinct, but lacks a lateral tooth on metasomal tergum 4 and the emargination of tergum 7 is deeper than wide. Both sexes are largely ferruginous bees, with obscure yellowish marks, especially on the face and the metasomal terga.

#### *Aztecantidium tenochtitlanicum*, NEW SPECIES

Figures 3–4, 10–12

*Diagnosis.*—Both sexes black and yellow, scutellum weakly bilobed. Female labrum emarginate and clypeus moderately protuberant and with small preapical tubercle in profile (Fig. 3). Male metasomal tergum 4 angulate or subdentate at side, emargination of tergum 7 wider than deep and apical lobes relatively narrow (Fig. 4).

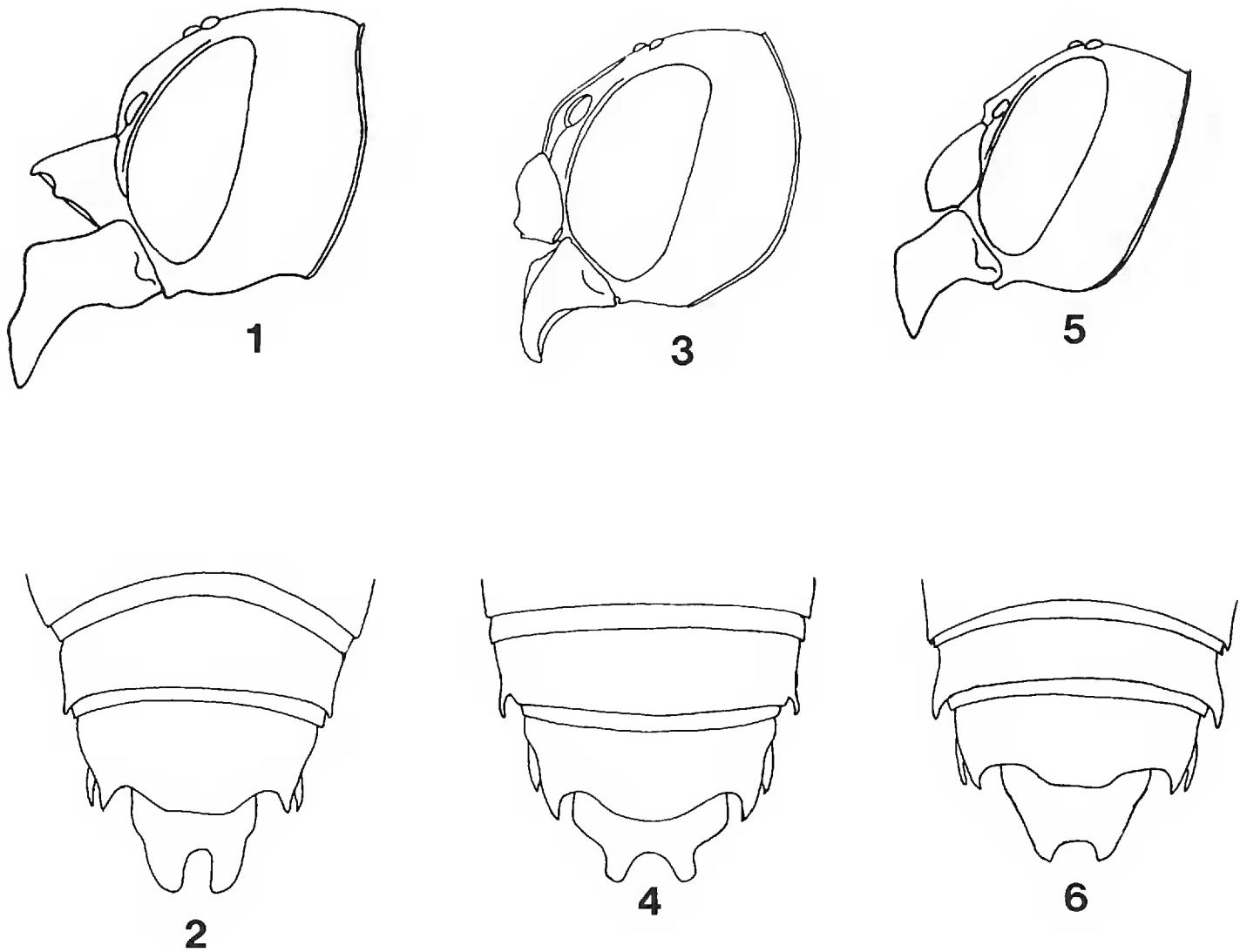


Fig. 1-6. Lateral view of female head and apical male metasomal terga, respectively, of : 1-2, *Aztecanthidium cuauhtemocum*; 3-4, *A. tenochtitlanicum*; 5-6, *A. xochipillium*.

*Description male holotype*.—Measurements (mm): head width 4.67; head length 3.85; wing length 11.3; total length 16.1.

*Paratypes*.—head width 4.29-4.68; head length 3.33-3.87; wing length 10.2-11.3; total length 12.3-16.3.

Head and body black, the following yellow: clypeus, except narrow black band along apical margin; paraocular area, ending broadly at about mid-level between base of clypeus and antennal socket; spot adjacent to inner upper eye margin at level of anterior ocellus; broad stripe on either side of anterior margin of mesoscutum and short, narrow stripe adjacent to tegula; broad posterior stripe on scutellum; small anterior spot on tegula; outer apical spot on metacoxa; large lateral spot on tergum 1; tergum 2 with preapical bar across middle one-third and with very narrow preapical stripe extending to large lateral spot; terga 3 and 4 similar to 2, but with preapical stripe only slightly broadened at sides; tergum 5 with only very narrow preapical stripe on lateral one-third; sterna 2-5 with irregular lateral blotches.

Head about 1.2 times as broad as long, inner eye margins slightly divergent below. Clypeus rugosopunctate. Paraocular and supraclypeal areas and frons rugosopunctate to subcontiguously punctate, interspaces moderately shiny; vertex similar but punctures subcontiguous and slightly larger. Ocellocular and interocellar

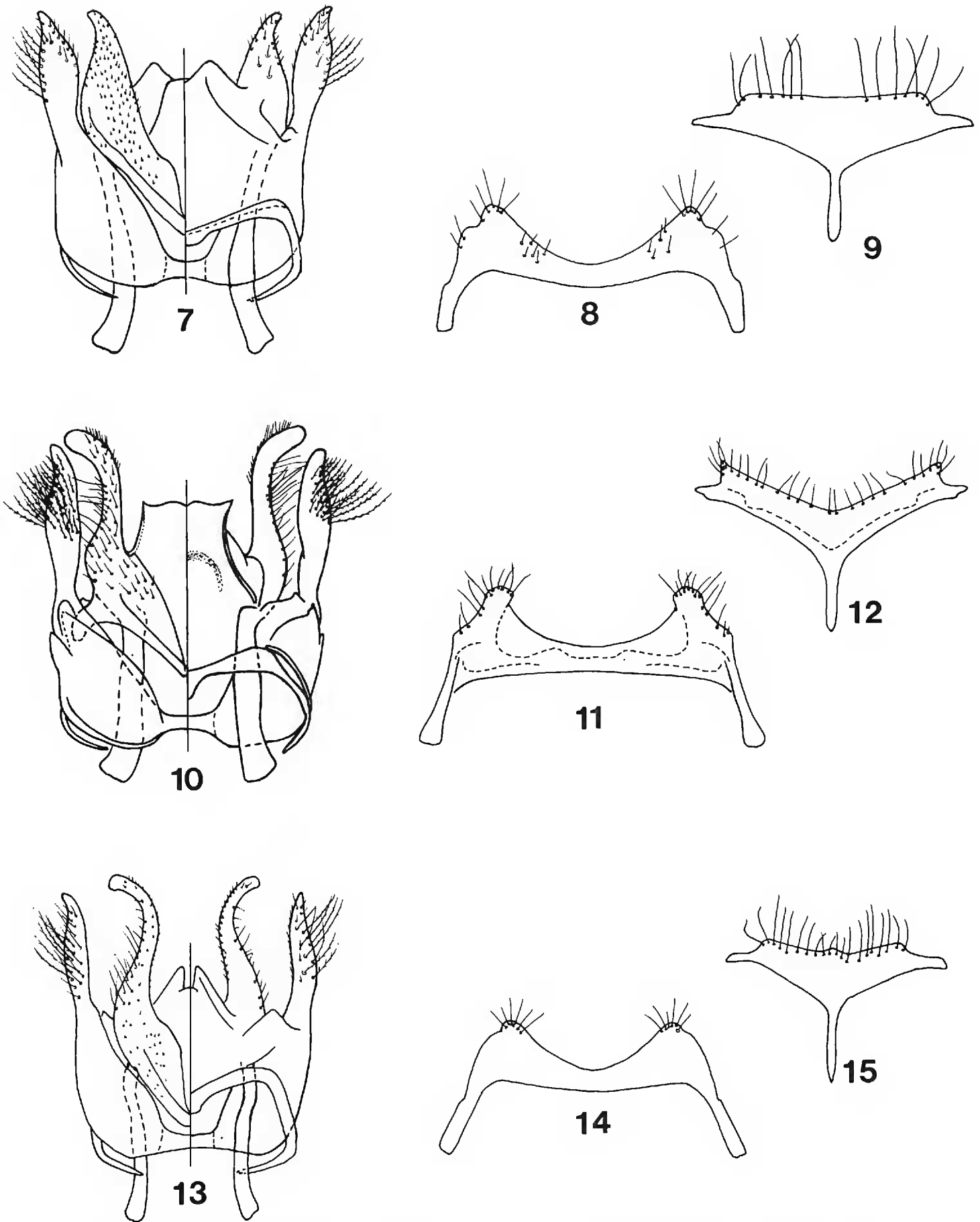


Fig. 7-15. Male genitalia and metasomal sterna 7-8 of : 7-9, *Aztecanthidium cuauhtemocum*; 10-12, *A. tenochtitlanicum*; 13-15, *A. xochipilium*.

distances about equal; ocelloccipital distance about 1.6 times interocellar distance. Greatest width of gena slightly less than width of eye. Labrum slightly depressed along midline. Apical tooth of mandible long, acute; second and third teeth obtuse; inner tooth short, acute.

Mesoscutal interspaces moderately shiny between subcontiguous, moderate

punctures. Propodeum dull, interspaces distinctly roughened, with broad median impunctate area. Dorsal face of scutellum with disc weakly depressed in middle, more broadly so distad, apical margin slightly concave between weak sublateral tubercles. Punctures of mesepisternum very coarse (about 0.08 mm), contiguous to subcontiguous; punctures of metepisternum moderate to coarse, mostly contiguous, but with some irregular interspaces up to a puncture diameter; interspaces of meso- and metepisterna shiny; side of propodeum roughened and slightly shiny between fine, subcontiguous punctures.

Profemur more than three times as long as broad or thick; meso- and metafemora less than three times as long as broad or thick. Pro- and mesobasitarsi each shorter than combined lengths of following segments; metabasitarsus longer than following segments combined.

Punctures of metasomal terga fine to moderate, subcontiguous to dense across middle, becoming almost uniformly subcontiguous at sides, interspaces moderately shiny. Tergum 4 with low, obtuse preapical tubercle at side in dorsal view; tergum 5 with conspicuous lateral spine; tergum 6 with a pair of spines on each side, inner spine longer and stouter; apical margin of tergum 6 slightly produced and subtruncate across middle one-third; tergum 7 bilobed, emargination broader than a semicircle, lobes narrow and subtruncate at apex. Sterna shiny, segments 3–5 slightly raised and impunctate along midline; apical margins straight, except 6 strongly convex medially; sterna 7 and 8 and genitalia as illustrated (Figs. 10–12).

Vestiture whitish, generally sparse and inconspicuous, longer and dense on gular area, side of mesosoma (especially on propodeum), and on side and apical margins of metasomal sterna.

*Female*.—Measurements (mm): head width 4.51–4.93; head length 3.72–4.09; wing length 10.6–11.5; total length 15.2–17.0.

Agrees generally with description of male except as follows. Inner eye margins strongly divergent below, lower interocular distance (at level of base of clypeus) 1.20–1.26 times minimum interocular distance. Clypeal profile convex toward base, concave before preapical declivity and summit of declivity slightly protuberant (Fig. 3); summit of declivity marked by more or less definite median tubercle and pair of smaller submedian tubercles (latter sometimes absent); disc of clypeus roughened and coarsely rugosopunctate in middle, becoming finely and subcontiguously punctate toward sides, usually without traces of median impunctate line. Ocellocular distance about 1.2 times interocellar distance; ocelloccipital distance 2.0–2.2 times interocellar distance. Gena, in profile, about as wide as eye. Mandible with four approximately equidistant teeth, second and third obtuse; setae of ventral brush sparse, none as much as one-half as long as mandible length. Flagellar segments about as broad as long.

Metasomal terga 4 and 5 without lateral spines or teeth; tergum 6 with short, obtuse spine on each side of broadly convex apical margin; terga 5 and 6 without short, stout, brown setae; sterna densely punctate and with long, yellowish white scopal hairs.

Color about as described for male, but clypeus with transverse yellow band across basal one-half or less, paraocular area black, metasomal tergum 2 with lateral mark only, tergum 5 wholly black, and sterna without lateral spots.

*Type material*.—Holotype male: Chamela, Jalisco, MÉXICO, 10 June 1983 (S. H. Bullock, 1953), in LACM. Paratypes, all from same locality: 18 ♂♂, 14 ♀♀, various

dates from 9 June to 3 December, various years (S. H. Bullock, C. D. Michener, F. D. Parker, and T. L. Griswold); paratypes in CHAM, LACM, UKAN, and UTSU.

*Etymology*.—The specific name is derived from that of the former Aztec empire, Tenochtitlán.

*Discussion*.—In addition to the type material cited above, I have seen 3♂♂, 4♀♀ from 17 km W Tehuantepec, Oaxaca, MÉXICO, 8 September 1965 (D. H. Janzen; UKAN), on *Caesalpinia sclerocarpa*. The only additional floral data are on Chamela specimens of both sexes collected by Michener at flowers of *Longchocarpus* sp.

The specimens examined are generally uniform in their morphological features. One male is unusually small, total length 11 mm, with a head width of 3.72 mm. Variation among the males otherwise consists of minor fluctuations in the extent of the yellow markings; many specimens lack tegular spots and lateral stripes on the mesoscutum, and most males are without a median preapical band on metasomal tergum 2. A few specimens possess small yellow maculations on the axillae.

The available females exhibit even less variety. The anterior and lateral mesoscutal maculations are more commonly united than in the males. The axilla is immaculate in all specimens and metasomal tergum 2 is consistently without a median preapical band. In many females the submedian tubercles at the summit of the clypeal declivity are reduced or absent; the median tubercle is consistently present.

This species is morphologically most similar to *A. xochipillium*, with which the female shares the emarginate labrum, clypeal shape, and quadridentate mandible. Males of these two species are similar in that both possess a lateral spine or tubercle on tergum 4 and the emargination of tergum 7 is wider than deep. These features separate both from *A. cuauhtemocum*.

The most conspicuous difference between *A. tenochtitlanicum* and *A. xochipillium* is color. The former is conspicuously black and yellow and the latter is red with obscure yellowish marks. The genitalia and associated sterna of *A. tenochtitlanicum* (Figs. 10–12) and *A. xochipillium* (Figs. 13–15) are distinctive for each species, but more similar to each other than either is the *A. cuauhtemocum* (Figs. 7–9).

#### *Aztecantidium xochipillium* Michener and Ordway

Figures 5–6, 13–15

*Aztecantidium xochipillium* Michener and Ordway, 1964: 72–73; ♂♀.

The type locality of *A. xochipillium* is 17 mi N Chilpancingo, 2550 feet elevation, Guerrero; the holotype and allotype were collected by Ordway and Roberts on 13 August 1962. The primary type and most paratypes are in UKAN. In addition to a paratype pair, and the specimens from Ahuacatlan, Nayarit, recorded by Michener and Ordway, I have seen the following specimens.

MÉXICO, Jalisco: 1♀, 3♂♂, Guadalajara, no date (Crawford; LACM). Michoacán: 1♀, Cojumatlán, 9 August 1964 (R. E. Ryckman, D. Spencer, C. P. Christianson; LACM). Nayarit: 2♂♂, 8 mi NW Ixtlán del Río, 10 September 1970 (E. M. Fisher; LACM).

Like *A. cuauhtemocum*, both sexes are largely reddish bees with obscure yellowish markings on the head and body. In both sexes the scutellum is distinctly bilobed and the lobes extend over the metanotum. Males of *A. xochipillium* have a distinct preapical spine or tooth laterad on metasomal tergum 4. The female clypeus is only

moderately protuberant, lacks a biarcuate carina, and the apex of the labrum is emarginate. In these characters the female is similar to that of *A. tenochtitlanicum*, but the clypeal profile is evenly convex and is without a definite preapical tubercle (Fig. 15).

#### ACKNOWLEDGMENTS

For the opportunity to examine material in their care I am indebted to S. H. Bullock (CHAM), T. L. Griswold (UTSU), and C. D. Michener (UKAN).

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